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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/595,785	04/05/2007	Kiyotaka Umemoto	40404.36/ko	6679

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ROHM CO., LTD.
C/O KEATING & BENNETT, LLP
1800 Alexander Bell Drive
SUITE 200
Reston, VA 20191

EXAMINER	
NGUYEN, MATTHEW VAN	

ART UNIT	PAPER NUMBER
2838	

NOTIFICATION DATE	DELIVERY MODE
02/05/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

JKEATING@KBIPLAW.COM
uspto@kbiplaw.com

Office Action Summary	Application No.	Applicant(s)	
	10/595,785	UMEMOTO ET AL.	
	Examiner	Art Unit	
	MATTHEW V. NGUYEN	2838	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 May 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *8-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *8-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11 May 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *5/11/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

1. The disclosure should be carefully reviewed and ensure that any and all grammatical, idiomatic, and spelling or other minor errors are corrected.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP2003-319643 (hereinafter '643) in view of JP2000-299978 (hereinafter '978).

With regard to claims 8-10, '643 (i.e., Fig. 1) shows a DC/DC converter for, through the opening and closing of a switching element (11), supplying power from an input power supply (Vin), via a coil (Lo), to an output terminal (Vo) connected to a load (14), and adjusting the voltage of the output terminal (Vo), the DC/DC converter comprising: a coil current detection element being a coil current detection resistor (15) interposed between the coil and the output terminal; a smoothing capacitor (Co) connected to the load side of the coil current detection element to smooth the voltage of the output terminal; a feedback circuit (CP1, CP2, FF, 18) arranged to, in synchrony with a reference clock (S) of a clock generator for closing and opening the switching element.

'643 does not disclose a reference current value control circuit arranged to detect the voltage of the coil side of the coil current detection element and to control a reference current value of a current flowing in the coil.

'978 also shows a DC/DC converter (Fig. 1) in which a reference current value control circuit (26) is arranged to detect the voltage of the coil side of the coil current detection element (Rs) and to control a reference current value of a current flowing in the coil (L).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the reference current value control circuit arranged to detect the voltage of the coil side of the coil current detection element and to control a reference current value of a current flowing in the coil as shown in '978 into the DC/DC converter of '643 for the purpose of enhancing the power efficiency of the circuit via a better performance in controlling opening and closing the switching element.

3. Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over '643 in view of '978 as applied to claims 8-10 above, and further in view of the Official Notice.

With regard to claims 11-13, '643 in view of '978 shows a DC/DC converter comprising all the claims subject matter as discussed above in section 2, except for an equivalent series resistance value of the smoothing capacitor being smaller than that of an electrolytic capacitor; the resistance value of the coil current detection element being larger than the equivalent series resistance value of the smoothing capacitor; and the

zero frequency of a frequency characteristic being determined by the coil current detection element and the smoothing capacitor.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to select an equivalent series resistance value of the smoothing capacitor being smaller than that of an electrolytic capacitor; the resistance value of the coil current detection element being larger than the equivalent series resistance value of the smoothing capacitor; and the zero frequency of a frequency characteristic being determined by the coil current detection element and the smoothing capacitor for the DC/DC power converter in '643 in view of '978, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

4. Claims 14-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over '643 in view of the Official Notice.

With regard to claims 14-18, '643 (i.e., Fig. 1) shows a DC/DC converter for, through the opening and closing of a switching element (11), supplying power from an input power supply (Vin), via a coil (Lo), to an output terminal (Vo) connected to a load (14), and adjusting the voltage of the output terminal (Vo), the DC/DC converter comprising: a coil current detection element being a coil current detection resistor (15) interposed between the coil and the output terminal; a smoothing capacitor (Co)

connected to the load side of the coil current detection element to smooth the voltage of the output terminal.

'643 does not disclose the zero frequency of a frequency characteristics being determined by the coil current detection element and the smoothing capacitor; an equivalent series resistance value of the smoothing capacitor being smaller than that of an electrolytic capacitor; and the resistance value of the coil current detection element being larger than the equivalent series resistance value of the smoothing capacitor.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to select the zero frequency of a frequency characteristics being determined by the coil current detection element and the smoothing capacitor; an equivalent series resistance value of the smoothing capacitor being smaller than that of an electrolytic capacitor; and the resistance value of the coil current detection element being larger than the equivalent series resistance value of the smoothing capacitor for the DC/DC power converter in '643, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MATTHEW V. NGUYEN whose telephone number is (571)272-2081. The examiner can normally be reached on 8 HOURS M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, AKM ULLAH can be reached on (571)272-2361. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/MATTHEW V NGUYEN/
Primary Examiner, Art Unit 2838